researches. Already the day is past when the similitude drawn by Anaxilas between music and Africa holds good, and even Cornelius Agrippa could no longer maintain that he "sayeth not amisse: By God, sayeth he, Musicke is even like Affricke; it yearely bringeth foorth some straunge Beaste."[1]

I have, however, said enough on what I feel are somewhat vague and general topics, and will now ask you to devote your attention to the business of the Section, when, no doubt, many subjects of interest will be more particularly discussed.

NOTES.

WITHIN the next few days the National Association for the Promotion of Technical and Secondary Education will issue a brief "Guide to Evening Classes in London," which is the first attempt to give a systematic account of the educational work carried on in such classes throughout the metropolis. The Guide will be classified according to subjects and districts, so that an intending student can see at a glance the place, day, and hour at which classes are available in any particular subject in the district in which he lives, as well as the fee, name of instructor, and other details. The price will be 6*d.*, and the publishers will be Messrs. Cassell and Co.

THE following is a list, in brief, of subjects on which the Dutch Society of Sciences at Haarlem invite research:—A history of the mathematical and physical sciences in Holland; isomorphism; minerals in the river and dune sands on the Dutch coast; the accessory sexual glands in mammalia; heat liberated in solution of various salts in water; decomposition of water or other liquids by disruptive electric discharges within or on the surface; influence of compression in different directions on specific inductive power; determination of the form and position of the reticular micrometers used by Lacaille at the Cape of Good Hope; influence of volume of molecules on pressure of a gas; relation between density and chemical composition of transparent bodies, and the index of refraction; modification of reflected light by magnetization of some other metal than iron; methods of obtaining and fixing new varieties in cultivated plants; *rôle* of bacteria in filtration of portable waters through a layer of sand; bacteria and azotized combinations in the soil; healing after grafting.

THE Report of the Director of the Hong Kong Observatory for 1889 states that a self-recording anemometer, rain-gauge, and sunshine-recorder, have been erected by the Imperial Maritime Customs at the important station of South Cape, Formosa, and the observations are received monthly at the Observatory. Among the investigations in progress are: the collection of information respecting typhoons, from the logs of men-of-war stationed in those seas, and an investigation of the climate of Hong Kong from five years' observations; this latter work is nearly ready for press. The Report contains an interesting comparison of spectroscopic rain-band observations with the rainfall during the subsequent 24 hours; Dr. Doberck considers that the indications frequently foretold great thunderstorms which could not otherwise have been forecast from local observations. On May 29 and 30, 1889, the colony was visited by thunderstorms of unusual duration; above 22·5 inches of rain fell in 24 hours, causing floods and serious damage to property.

THE Journal of the Franklin Institute for September contains several interesting papers. Few can speak with more authority on "Precious Stones" than Mr. George F. Kunz, and his lecture delivered in February last, before the Franklin Institute, is replete with information respecting them. Under the heading "Electricity in Warfare," Lieutenant Bradley A. Fiske, U.S.N., comments upon the present condition of the art, indicates in what ways electricity is now actually employed, and what is the direction of progress. Mr. Joseph M. Wilson, the President of the Institute, continues his paper on schools, with particular reference to trades schools, and gives an account of the method of work set forth in the Science and Art Directory and in the Prospectus of the Normal School of Science. Among the other papers are the following: On fresh-water wells of the Atlantic beach, by Mr. Persifor Frazer. On the strength of gear teeth, by Mr. Samuel Webber; and on the electrolytic method as applied to palladium, by Messrs. E. F. Smith and H. F. Keller.

THE *Monthly Weather Review* issued by the Meteorological Service of the Dominion of Canada consists of telegraphic reports of observations received for the purpose of weather predictions and of reports of storms received by mail. Tables of temperature, pressure, wind, and precipitation are given, together with the records of sunshine and auroræ. The total number of storm warnings issued last month was 93, of which 77 or 82·8 per cent. were verified. Of the 77 warnings in connection with the direction of the wind, 66 or 85·7 per cent. were fully verified, and 72 or 93·5 partly verified. The steps made in the prediction of weather form an important factor nowadays in commercial life, and in Canada forecasts are posted up nightly at every telegraph station.

WE have received from America the summary of the weather during the last month, and also the forecast for September. The review shows that on the whole fine weather has prevailed, although occasionally disturbed by a few storms. The first storm of note was central on the 14th, about lat. 55° N., longitude 25° W., and was accompanied by moderate to strong gales, and high seas; the second moved from Southern New England to Nova Scotia on the 27th. The forecast indicates fine weather, with occasional gales north of the 35th parallel. Less fog will be found along the transatlantic steamship routes, and little ice will be encountered off the Grand Banks. An accompanying chart gives a brief but complete statement as regards these dangerous storms. A new series of storm signals at Havana were commenced in August, 1889, and this year night-signals have been added, details of these being given in an accompanying table. There is also a list of charts that have been published and corrected during the month of August, and information respecting dangerous obstructions to navigation along the coast.

WE have received from Mr. Edward Stanford, a *résumé* of the publications of the Ordnance Survey for England and Wales, with an introductory description of the survey by Major Francis P. Washington, R.E. The new 1-inch general map is reduced from the 6-inch maps, and will consist of 360 small sheets, 178 of which have been already published. This survey is well adapted for walking or driving purposes, and residential maps can be made up for 10, 15, or 20 miles round any centre. In this catalogue the particulars of each county are given in alphabetical order, and the mounting details will be found very useful to those who use maps to a great extent. At the end of the pamphlet there are some illustrations of various neat and handsome methods of mounting these maps for both library and schoolroom purposes.

A PAMPHLET on "Acoustics in Relation to Wind Instruments," by D. J. Blackley, consists of a series of lectures given by him to the students at the Royal Military School of Music, Kneller Hall, in May 1887. They have been revised and somewhat amplified, and now form a general sketch of the subject under consideration, and will be useful to those desirous of understanding the principles underlying the construction and use of wind-instruments, the illustrations of wave-motion given in them not being confined only to experiments with cylindrical tubes. There is an appendix on musical pitch, which has been

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[1] "Vanitie of Sciences," cap. 17.

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written with special reference to military and orchestral wind bands.

IN the number of *La Nature* for September 6 there is a detailed account of an ingenious application of the properties of iodide of nitrogen to photometry. The photometer, invented by M. Lion, is based on the fact that equal surfaces of iodide of nitrogen, preserved under its mother-liquor, and exposed for equal times to lights of equal intensities, evolve equal quantities of nitrogen. Two vessels are connected by a differential manometer, and when the rate of evolution of the nitrogen is the same in each, the manometer is unaffected. It is stated that the iodide of nitrogen, kept in the mother-liquors in which it has been prepared, is perfectly safe to handle. In practice, owing to the difficulty of exactly balancing the two halves of the apparatus, a method analogous to "weighing by substitution" is employed. The accuracy attainable in the measurements is not stated. In the same number another photometer of considerable theoretical interest is described. It is the invention of MM. Seguy and Verschaffel, and was described by them on September 1 at the Academy of Sciences, Paris. It is based upon the principle of Crookes' radiometer, but the disks, instead of being free to rotate, are suspended by a silk fibre, and with an indicating needle and divided circle, form a torsion balance. An alum cell is placed in front of the instrument, which, as a photometer, appears to be very sensitive, indicating 1–100th of a standard candle. Moreover, two instruments can be constructed, which with light of the same intensity give the same readings, an important practical advantage. So long as these instruments are used to compare lights of the same quality, there seems to be no doubt that they can both be made to yield results of practical value, and comparable with each other. It appears doubtful, however, whether the same figure would be obtained with the chemical and with the mechanical photometer, if used to compare the illuminating powers of two sources of light that differed much in character, such as an arc lamp, and a candle flame.

THE additions to the Zoological Society's Gardens during the past week include a Green Monkey (*Cercopithecus callitrichus* ♀) from West Africa, presented by Mrs. Roupell; a Sykes's Monkey (*Cercopithecus albigularis* ♀) from East Africa, presented by Mr. M. Tanner; two Bonnet Monkeys (*Macacus sinicus* ♂ ♀), a Toque Monkey (*Macacus pileatus* ♀), two Ring-necked Parrakeets (*Palæornis torquatus*) from India, presented by Mrs. Julie Rule; a Rhesus Monkey (*Macacus rhesus* ♀) from India, presented by Mr. W. Dodson; a Grey Ichneumon (*Herpestes griseus* ♂) from India, presented by Master Stanley Kerfoot; a Brush-tailed Porcupine (*Atherura africana*) from West Africa, presented by the Liberian Government Concessions and Exploration Co., Lt.; a Common Viper (*Vipera berus*) from Hampshire, presented by Mr. W. H. B. Pain; a Pig-tailed Monkey (*Macacus nemestrinus* ♂) from Java, deposited; two Vinaceous Turtle Doves (*Turtur vinaceus*) bred in the Gardens.

OUR ASTRONOMICAL COLUMN.

OBJECTS FOR THE SPECTROSCOPE.

Sidereal Time at Greenwich at 10 p.m. on September 18 = 21h. 51m. 4s.

Name.	Mag.	Colour.	R.A. 1890.	Decl. 1890.
			h. m. s.	° ′
(1) G.C. 4695	—	—	21 40 2	− 9 20
(2) G.C. 4734	—	—	21 55 27	+17 12
(3) 75 Cygni	5	Yellowish-red.	21 35 52	+42 47
(4) α Aquarii	3	Yellowish-white.	22 0 6	− 0 51
(5) θ Pegasi	3	White.	22 4 24	+ 5 39
(6) 249 α Schj.	6	Red.	21 37 23	+35 1
(7) R Scuti	Var.	Red.	18 41 36	− 5 50

Remarks.

(1 and 2) No record has yet been made of the spectrum of either of these objects. The first is described in the General Catalogue as a nebulous star, or a very small cluster; the second as "pretty bright; pretty small; round; brighter in the middle to a nucleus; mottled as if with stars; star south preceding." No very bright nebulæ are near the meridian at 10 o'clock during the present week.

(3) The spectrum of this star is a very interesting one of Group II. Instead of the spectrum being totally discontinuous, as in α Herculis and others, the bands 2, 3, 7 are well marked, whilst 4, 5, and 8 are so feeble as to be hardly visible. This species of spectrum has been explained by supposing that the meteor-swarm is still sparse and the carbon radiation consequently bright. When the positions of the feeble bands are considered, it will be seen that the explanation is complete. Band 8 extends from about λ 503·5 to λ 496, and this will therefore be partly masked by the extremity of the brightest carbon fluting starting near λ 517. Bands 4 and 5 both come within the range of the second carbon fluting, starting near λ 564, and they also will be partly obliterated when the carbon flutings are wide. None of the other bands, however, will suffer from masking in this way, and they therefore should remain dark. It will be interesting if this explanation can be tested by a direct observation of an unusual width or brightness of the carbon flutings.

(4) This star has a spectrum of Group III., and may be observed as a study of criteria.

(5) A star of Group IV. (Vogel).

(6) This is a typical star of Group VI., showing in addition to the ordinary carbon bands no less than six of the secondary bands, namely 2, 3, 4, 5, 7, and 8. Dunér remarks that the two latter are undoubtedly bands, and not lines; their wave-lengths are 551 and 528 respectively, the latter almost agreeing with E of the solar spectrum. The general spectrum consists of four zones—that is, there is a certain amount of light beyond the carbon band commencing at 474. An observation of the precise character of this band would be interesting; in comets it sometimes ends abruptly at 474, sometimes fades away gradually on both sides at 468, and sometimes has two maxima, one at 468 and one at 474.

(7) Like S Vulpeculæ, referred to last week, this is a variable of comparatively short range and short period, but whereas the spectrum of the former is known to be one of Group II., that of the latter has yet to be determined. Although the period is but 168 days, we have not as yet any record of the light-curve of the star, which promises to be an interesting one from the fact that the maximum is stated as 4·7–5·7 and the minimum as 6·0–8·5 (Gore). If the spectrum be one of Group II. the shortness of the period suggests that the bands should be rather narrow, and this may be made a test observation. There will be a maximum about September 23.

A. FOWLER.

THE URANIA GESELLSCHAFT.—An interesting account of the Urania Institution at Berlin appears in the publications of the Astronomical Society of the Pacific, vol. ii., No. 9. The account was originally written for Prof. Holden by Dr. M. Wilhelm Meyer, the director of the institution. It appears that Prof. Foerster, the director of the Berlin Observatory, first proposed the formation of an observatory that should be open to the public, and his proposition was afterwards modified so as to include other branches of natural science. The project was warmly supported by Herr von Gossler, the Prussian Minister of Public Instruction, a grant of land was made, and in March 1888 a sort of joint stock company was formed having for its object simply the diffusion of knowledge. The idea having thus taken tangible form, the work of construction was begun. On July 2, 1889, the institution was opened to the public, and at the end of the year had been visited by 60,000 persons.

The astronomical department has been the main attraction from the beginning. It contains a twelve-inch refractor equatorially mounted, and electrically controlled and illuminated. The instrument is provided with a filar micrometer, a polarizing telescope, and a complete set of eye pieces ranging in power from 70 to 1300 diameters. Unfortunately neither spectroscopic nor photographic accessories have yet been supplied. Five other telescopes are possessed by the Urania Observatory, viz. a six-inch refractor, a four-inch refractor, a six-inch reflector, a two and a half inch transit instrument, and a comet seeker of five inches aperture.

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